IEEE P802.11
Wireless LANs

|  |
| --- |
| BPE Discovery Comments Resolutions  |
| Date: 2025-04-22 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Jarkko Kneckt | Apple Inc | Cupertino CA |  | jkneckt@apple.com |
|  |  |  |  |  |

Abstract

This submission contains resolutions to the following 67 CIDs:

1, 3, 20, 21, 64, 99, 100, 101, 102, 103, 134, 306, 312, 325, 335, 364, 365, 366, 415, 416, 417, 418, 505, 506, 616, 617, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 633, 634, 635, 636, 637, 638, 639, 746, 747, 749, 773, 775, 815, 830, 831, 832, 833, 834, 835, 836, 837, 838, 893, 894, 895, 930, 994, and 1021.

# **Solved comments:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1 | 95.29 | 10.71.8.2 | "A Privacy Beacon frame shall not contain a Multiple BSSID element",how the STA discover the nontransmitted BSSID? Do it mean 11bi isn't compatible with MBSSID feature? | please clarify or address such campatible issue. | REVISED. The Privacy Beacon is a single AP MLD specific and can be shared only to a single ESS. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #1.  |
| 3 | 94.63 | 10.71.8.2 | How the BPE non-AP MLDs obtain GTK PN to decrypt to payload? | add the following text to address such issue:"GTK PN shall be same to the BIPN in MMC element". |  REJECTED. The PN is included in the GCMP Headers that are included between the MAC Header and the payload. Please note that Privacy Beacons do not contain MMC element. |
| 20 | 44.01 | 9.3.4.4 | "...a value, as described in 10.71.8.1. No comma required. But more ikportantly, the reference should be to 10.71.8.2 | At 44.1 delete comma.and change "10.71.8.1" to "10.71.8.2" | ACCEPTED |
| 21 | 44.07 | 9.3.4.4 | "The frame body of the Privacy Beacon frame contains the information shown in Table 9-76a". This is not the way to refer to the figure. | Rewrite cited text : "The Privacy Beacon frame body is shown in Table 9-76a" | ACCEPTED |
| 64 | 72.32 | 9.6.42.8 | "...transmitted as non-protected management frame..." Should be "transmitted as a non- protected..." | At cited location insert "a" after "as" | ACCEPTED |
| 99 | 94.42 | 10.71.8.1 | "A BPE AP should schedule an unprotected Privacy Beacon frame to transmissionat least within a dot11PrivacyBeaconResponseTime, if it has received a Privacy Beacon Solicit Requestframe." Rephrase and should be "schedule for transmission" | Rewrite as follows "On reception of a Privacy Beacon Solicit Request frame, a BPE AP should schedule an unprotected Privacy Beacon frame for transmission at least within a dot11PrivacyBeaconResponseTime." | REVISED Agree in principle with the commetn. The privacy beacon is always encrypted as described in the clause, so it is not possible to transmit unprotected privacy beacon. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #99.  |
| 100 | 94.62 | 10.71.8.2 | "A payload of a Privacy Beacon frame is..." Should be The payload. | At cited location change "A payload" to "The payload" | ACCEPTED |
| 101 | 95.06 | 10.71.8.2 | "...shall use the Equation (28) to determine.." Reference is wrong | Replace cited text with "shall use Equation (10-28) to determine" | ACCEPTED |
| 102 | 95.26 | 10.71.8.2 | "A BPE AP may include Extended Channel Switch Announcement element..." Missing indefinite articoe | Edit cited text as follows: "A BPE AP may include an Extended Channel Switch Announcement element" | ACCEPTED |
| 103 | 95.31 | 10.71.8.2 | "An associated non-AP MLD maintains a BPCC value for each BPE AP it has a link" Back to front and does not read right. | Rewrit cited as follows: "An associated non-AP MLD maintains a BPCC value for each BPE AP with which it has a link." | ACCEPTED |
| 134 | 44.17 | 9.3.4.4 | BPCC element is not defined anywhere in the draft or in the baseline. 11be has "BSS Parameters Change Count" field in Common Info field of the Basic Multi-Link element. | Define it or remove it. | REVISED. The BPCC is defined as written in the Information column. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #134.  |
| 306 | 43.65 | 9.3.4.4 | In privacy beacon format, A2 contains the anonymized BSSID. I have not seen in the spec how do you do that. In case it is explained somewhere, add a reference, in case it is not, define how to do that. The anonymised BSSID maybe is the anonymised otaMAC of AP, but it is not clear. | as in the comment | Revised. Agree in principle that a reference is needed. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #306.  |
| 312 | 95.95 | 10.71.8.2 | A "A BPE non-AP MLD shall use the Equation (28) " should be "A BPE non-AP MLD shall use the Equation (10-28)" | as in the comment | Revised. This comment is duplicate (#101).Replace cited text with "shall use Equation (10-28) to determine" . Please make the changes as shown in the submission 25/583r0 and identified with CID #101. |
| 325 | 43.46 | 9.3.4.4 | repeated words "of the of the" | change to "of the" | ACCEPTED |
| 335 | 73.32 | 9.6.42.8 | Needs an article | Change to "frame is transmitted as a non-protected management frame" | Duplicate of #64. ACCEPTED. |
| 364 | 95.26 | 10.71.8.2 | Missing article "A BPE AP may include Extended Channel Switch Announcement element" | change to: "A BPE AP may include an Extended Channel Switch Announcement element" | Duplicate of #102. ACCEPTED |
| 365 | 95.31 | 10.71.8.2 | Missing word: "An associated non-AP MLD maintains a BPCC value for each BPE AP it has a link" | Change to: "An associated non-AP MLD maintains a BPCC value for each BPE AP with which it has a link" | Duplicate of #103. ACCEPTED |
| 366 | 95.43 | 10.71.8.2 | Missing period at end of sentence | Add period at the end of sentence. | ACCEPTED  |
| 415 | 44.01 | 9.3.4.4 | "The Identity Hash field is set to a value" -- I would never have guessed | Delete "to a value," | ACCEPTED |
| 416 | 0.00 |   | "BSS Parameter Change Count(BPCC)" -- elements have only one name | Change to just "BPCC" throughout, except in the heading of the subclause definining it (see RSNE as an example) | ACCEPTED. Discuss. Leave to TGBI editor.  |
| 417 | 44.10 | 9.3.4.4 | All the elements shown are only present if the PB is protected | If this is a general rule, say so. If this is not a general rule, add a NOTE to say so | REVISED. Agree in principle with the comment. The unprotected Privacy Beacon is allowed to be transmitted, if the AP has no associated STAs. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #417.  |
| 418 | 0.00 | 9.3.4.4 | "AP MLD" missing "the" (4x) | As it says in the comment | REVISED. This sentence is deleted by the #417. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #418.  |
| 505 | 73.32 | 9.6.42.8 | "The Privacy Beacon Solicit Request frame is transmitted as non-protected management frame" but EDP Action frames are defined to be robust | Create a new category for unprotected EDP action frames |  REVISED. This CID is similar to #930.Agree in principle with the comment. The frame is changed as public action frame. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #930. |
| 506 | 73.33 | 9.6.42.8 | "The frame solicits unprotected Privacy Beacon frame transmissions as a response to the frame as described in 10.71.8.1 (BPE AP MLD Discovery)." is behaviour not format | Delete the cited text |  ACCEPTED |
| 616 | 94.22 | 10.71.8.1 | "Privacy Beacon frames 9.3.4.4 (Privacy Beacon frame format)" | Delete "9.3.4.4 (Privacy Beacon frame format)" | ACCEPTED |
| 617 | 94.38 | 10.71.8.1 | ", to solicit" spurious comma | Delete the comma | ACCEPTED |
| 618 | 94.39 | 10.71.8.1 | "transmitting AP MLD Identity Key" -- last 2 words should be lowercase | As it says in the comment | ACCEPTED |
| 619 | 94.42 | 10.71.8.1 | "A BPE AP should schedule an unprotected Privacy Beacon frame to transmis-sion at least within a dot11PrivacyBeaconResponseTime" is weird | Change to "A BPE AP should schedule an unprotected Privacy Beacon frame for transmis-sion at least every dot11PrivacyBeaconResponseTime" | ACCEPTED |
| 620 | 94.44 | 10.71.8.1 | "An unprotected Privacy Beacon frame has no payload as shown in 9.3.4.4 (Privacy Beacon frame for-mat)." duplicates Clause 9 | Delete the cited text | REVISED. CID#99 clairfies that the unprotected privacy beacon is transmitted as a response to a received solicitation frame. This should clarify also this comment. TGBI Editor, please make the make the changes as shown in the submission 25/583r0 and identified with CID #99.  |
| 621 | 94.37 | 10.71.8.1 | This whole para talks of "unprotected Privacy Beacon"(s), which implies that you can have protected Privacy Beacon frames too | Either delete "unprotected" and have statement that Privacy Beacon frames are not protected, or add some behaviour rules for protected Privacy Beacon frames | REVISED. A NOTE is added to to clarify use of non-protected Privacy Beacon in more details. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #620.  |
| 622 | 94.48 | 10.71.8.1 | "NOTE 1--If the medium is congested, the transmission of a Privacy Beacon frame might take longer than the dot11PrivacyBeaconRespon" -- it is highly unlikely that the transmission will take this long | Change to "NOTE 1--If the medium is congested, the interval between some consecutive Privacy Beacon frames might be more than dot11PrivacyBeaconRespon" | REVISED. CID #417 added rules to clause 10.71.8.2 when a protected Privacy Beacon frames are transmitted. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #417.  |
| 623 | 94.57 | 10.71.8.2 | "A BPE AP MLD shall indicate the status of buffered frames in a TIM element of a Privacy Beacon frame " should be "... in the TIM element ..." | As it says in the comment | REVISED. The referenced clause 35.3.12.4(Traffic indication) uses wording shall indicate. It is better to mandate this operation to the BPE AP by using shall. Agreee on "the". TGBI Editor, make the changes as shown in the submission 25/583r0 and identified with CID #623.  |
| 624 | 94.62 | 10.71.8.2 | "A payload of a Privacy Beacon frame is encrypted by the GTK" -- but above it talks of "unprotected Privacy Beacon"! | Clarify whether or not PBs are protected, and if can be both, the conditions under which they are | REVISED. The conditions when to send protected and unprotected Beacon frmaes are clarified by CID#417. TGBI Editor, make the changes as shown in the submission 25/583r0 and identified with CID #417.  |
| 625 | 94.62 | 10.71.8.2 | "A payload of a Privacy Beacon frame is encrypted by the GTK" -- should be "The payload..." | As it says in the comment | Duplicate of CID #100. ACCEPTED |
| 626 | 94.63 | 10.71.8.2 | "The AAD of the Pri-vacy Beacon frame is constructed as defined in 12.5.4.3.3 (Construct AAD). " duplicates Clause 12 | Delete the cited text | ACCEPTED |
| 627 | 94.63 | 10.71.8.2 | ", and the payload can be decrypted only by the BPE non-AP MLDs associated with the BPE AP MLD of the transmitting BPE AP" is true of anything involving a key, i.e. only people with the key can handle the protection | Delete the cited text | REJECTED. This text clarified the use of the Privacy Beacon Payload. The main target of the sentence is to justify why the Privacy beacon payload does not contain all BPE AP parameters.  |
| 628 | 94.62 | 10.71.8.2 | "A payload of a Privacy Beacon frame is encrypted by the GTK, and the payload can be decrypted" -- not clear what "payload" is | Change to "frame body" | REVISED. Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #628.  |
| 629 | 95.01 | 10.71.8.2 | "MAC Header " should be "MAC header " | As it says in the comment | ACCEPTED |
| 630 | 95.06 | 10.71.8.2 | "the Equation (28)" -- spurious article | Delete "the" | Duplicate of #101. ACCEPTED |
| 631 | 95.06 | 10.71.8.2 | " whether it is preconfigured with the transmit-ter" -- not clear what it means for an MLD to be preconfigured with a transmitter | As it says in the comment | REVISED. Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #631.  |
| 633 | 0.00 |   | Is it "preshared" or "preconfigured" | Pick one and stick to it | REVISED. Preconfigured seems better wording here. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #633.  |
| 634 | 95.23 | 10.71.8.2 | "the A2 field of the Privacy Beacon" -- no such field | Change to "the Address 2 field of the Privacy Beacon" | ACCEPTED |
| 635 | 95.26 | 10.71.8.2 | "may include Extended Channel Switch Announcement element" missing article | As it says in the comment | Duplicate of #102. ACCEPTED |
| 636 | 95.31 | 10.71.8.2 | "BPCC value" is not defined. There is a reference to a BPCC element, a.k.a. BSS Parameter Change Count, but that's very vague and anyway isn't defined either | Clarify what this value is | REVISED. Added clarification what is BPCC. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #636.  |
| 637 | 95.33 | 10.71.8.2 | "the non-AP MLD shall obtain the updated BSS parameter values of the AP before it may send data to the AP." -- that's not a real "may" | Change "may send" to "sends" | ACCEPTED |
| 638 | 95.37 | 10.71.8.2 | "An associated BPE non-AP MLD and a BPE AP MLD may use the procedure defined in 12.16.4 (EDP capa-bilities and operation parameters request and response procedure) to obtain capabilities and operation parameters of BPE AP MLD." -- the AP MLD doesn't need to obtain anything. Also missing article | Change to "An associated BPE non-AP MLD may use the procedure defined in 12.16.4 (EDP capa-bilities and operation parameters request and response procedure) to obtain the capabilities and operational parameters of a BPE AP MLD." | ACCEPTED |
| 639 | 95.42 | 10.71.8.2 | "A BPE AP may send encrypted, unsolicited broadcast addressed Capabilities And Operation Parameters Response frames to signal updated BSS parameter values to STAs of associated BPE non-AP MLDs" -- don't need to say unsolicited or addressed, also missing full stop | Change to "A BPE AP may broadcast encrypted Capabilities And Operation Parameters Response frames to signal updated BSS parameter values to STAs of associated BPE non-AP MLDs." | REVISED. The unsolicited is added to the proposed text. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #639.  |
| 746 | 142.59 | C.3 | The units are missing | Add a UNITS line | REVISED. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #746.  |
| 747 | 142.59 | C.3 | "Pri-vacy Beacon" should be "Pri-vacy Beacon frame" | As it says in the comment | ACCEPTED |
| 749 | 142.59 | C.3 | "This attribute defines the maximum time in which a BPE AP schedules a Pri-vacy Beacon to transmit as a response to a received Privacy Beacon Solicit Request frame" is not clear | I think it's "... the maximum time after receiving a xxx that a xxx is scheduled for transmission" | REVISED Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #749.  |
| 773 | 94.44 | 10.71.8.1 | The sentence " An unprotected Privacy Beacon frame has no payload as shown in 9.3.4.4 (Privacy Beacon frame format)." is unclear. Maybe use "as described in Table 9-76a" | As in comment | REVISED. Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #773.  |
| 775 | 94.62 | 10.71.8.2 | Replace "A payload of a Privacy Beacon frame is encrypted by the GTK, and the payload can be decrypted only by the BPE non-AP MLDs associated with the BPE AP MLD of the transmitting BPE AP" with "The payload of a Privacy Beacon frame is encrypted by the GTK and it can be decrypted only by the BPE non-AP MLDs associated with the BPE AP MLD of the transmitting BPE AP." | As in comment | REVISED. The text has been modified with #100 and #628. Changed the payload to it. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #775.  |
| 815 | 44.01 | 9.3.4.4 | The description of the Identity Hash field refers to Clause 10.71.8.1, but the use the Identity hash is described in Clause 10.71.8.2 | Change "in 10.71.8.1 (BPE AP MLD Discovery)" to "in 10.71.8.2 BPE AP MLD beaconing" | Duplicate of #415. ACCEPTED |
| 830 | 94.38 | 10.71.8.1 | The behavior of the BPE non-AP MLD after requesting an unprotected Privacy Beacon is not clear. The next sentence refers to a BPE non-AP STA rather than the MLD It would help to describe the received Beacon as the unprotected Privacy Beacon. After detecting whether the BPE STA has the preshared key, it may associate. The text says that after detecting whether it has the beacon, the STA can associate, but that would only be true if it does have the key. | Revise second sentence as follows: "A BPE non-AP MLD may determine from a received unprotected Privacy Beacon frame whether it has the preshared identity key for the transmitting BPE AP MLD, as defined in 10.71.8.2 (BPE AP MLD beaconing). If the BPE non-AP MLD has the preshared identity key, it may associate with the BPE AP MLD." | REVISED. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #830.  |
| 831 | 94.43 | 10.71.8.1 | The purpose of dot11PrivacyBeaconResponseTime is unclear. Other similar frame pairs (e.g., Probe Request/Response) do not have such timers. And based on the contents of Note 1, the recipient can't use this as a strict timer to determine when to give up waiting for a response | Remove the sentence "A BPE AP should schedule an unprotected Privacy Beacon frame to transmission at least within a dot11PrivacyBeaconResponseTime, if it has received a Privacy Beacon Solicit Request frame", Note 1 on this page, and the references to the dot11PrivacyBeaconResponseTime in Annex C. | REJECTED The dot11PrivacyBeaconResponseTime ensures that a Privacy Beacon is transmitted fast. This is important for the scanning device, because it needs to know how long it needs to wait for a response. The responses should be transmitted fast back to the STA. Probe Responses are transmitted within 5ms back to the requesting STA in an empty channel. |
| 832 | 94.44 | 10.71.8.1 | The text says that unprotected Privacy Beacon frames have no payload and refers to clause 9.3.4.4. The text in that clause does not refer to a payload. The notes associated with the elements in the Privacy Beacon frame body do indicate that they are only present if the frame is protected | Revise sentence to "An unprotected Privacy Beacon frame does not contain the elements in the Privacy Beacon frame body as shown in 9.3.4.4 (Privacy Beacon frame format)." | REVISED. The CID is similar to #620 and #773. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #620.  |
| 833 | 94.62 | 10.71.8.2 | The text refers to the "payload" of the Privacy Beacon being encrypted. It would be clearer to be more explicit about which portions of the frame are encrypted. | Alter this paragraph to read "The AAD of the Privacy Beacon frame is constructed as defined in 12.5.4.3.3 (Construct AAD). The payload of a Privacy Beacon frame (i.e., elements after the AAD) is encrypted by the GTK, and the payload can only be decrypted by the BPE non-AP MLDs associated with the BPE AP MLD of the transmitting BPE AP." | REVISEDThe commenter is correct that payload is not the correct word here. Payload is changed to frame body. The AAD is removed from the sentence. This is similar to comments 100,628, 775. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #628.  |
| 834 | 95.27 | 10.71.8.2 | Given that clause 9.3.4.4 defines the contents of the Privacy Beacon, which does not include the Multiple BSSID element, it does not seem necessary to state it again. | Remove the sentence "A Privacy Beacon frame shall not contain a Multiple BSSID element." If the intention is to say that a BPE AP MLD cannot be part of a multiple BSSID set, then revise language to say that. | REVISED. Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #834.  |
| 835 | 95.31 | 10.71.8.2 | Missing words in sentence | Revise sentence to "An associated non-AP MLD maintains a BPCC value for each BPE AP with which it has a link." | REVISED. This CID is similar to #636 and #103. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #103.  |
| 836 | 95.31 | 10.71.8.2 | Including "shall" and "may" in the description of the same behavior could cause confustion. | Revise sentence to say "If an associated non-AP MLD detects that a BPCC value of a BPE AP in a received Privacy Beacon frame is larger than its stored BPCC value for that AP, then the non-AP MLD shall obtain the updated BSS parameter values for the APbefore sending any data to the AP." | REVISED. This CID is similar to #637. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #637.  |
| 837 | 95.37 | 10.71.8.2 | The capabilties and operations procedure allows the non-AP MLD to obtain information from the AP MLD, but not vice versa | Revise sentence as "A BPE non-AP MLD associated with a BPE AP MLD may use the procedure defined in 12.16.4 (EDP capabilities and operation parameters request and response procedure) to obtain capabilities and operationparameters from the BPE AP MLD." | REVISED. Agree in principle with the comment. This CID is similar to #638. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #638.  |
| 838 | 95.43 | 10.71.8.2 | Use "affiliated with" to describe STA-to-MLD relationship | Replace "to STAs of associated BPE non-AP MLDs" with "to STAs affiliated with associated BPE non-AP MLDs" | ACCEPTED |
| 893 | 95.10 | 10.71.8.2 | Please harmonize the terms between "preconfigured Identity Key" and "preshared Identity Key. | As in comment | REVISED Agree in principle with the comment. This CID is similar to #631.TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #631.  |
| 894 | 94.44 | 10.71.8.1 | Please harmonize the terms "payload" and "Frame Body" used for the Privacy Beacon | As in comment | REVISED Agree in principle with the comment. This CID is similar to #628.TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #628.  |
| 895 | 94.63 | 10.71.8.2 | Indicate that the BPE AP generate a Identity Hash in the privacy beacon. | As in comment | REJECTED. The BPE AP transmits the Privacy Beacon, so the BPE AP needs to have the Identity Hash value before it transmits the frame. The spec should allow flexibility for different implementations. There may be mulitple different alternatives to calculate the identity hash value. The spec should not select just a single option for the identity hash calculation.  |
| 930 | 35.22 | 9.2.4.1 | Is there a reason why Action frame is not used? Why would one categorize Privacy Beacon as extension | Clarify. Prefearble solution is to have it as an action frame | REVISED. Agree in principle with the comment. TGBI Editor, please make the changes as shown in the submission 25/583r0 and identified with CID #930.  |
| 994 | 44.01 | 9.3.4.4 | The cross reference is incorrect. | Update cross reference to 10.71.8.2 (BPE AP MLD Discovery). | Similar to CID #20. ACCEPTED |
| 1021 | 73.34 | 9.6.42.8 | The text "as a response to the frame" is superflous - this is clear from the rest of the sentence | Delete "as a response to the frame" | Similar to CID #506. ACCEPTED |

**Normative text**

***Instructions to the Editor: All comment resolutions are shown with track changes to the existing spec text. Please modify 802.11bi spec as shown here.***

**9.3.4.5 Privacy Beacon frame format**

The format (#325) of the Privacy Beacon frame is shown in Figure 9-135a (Privacy Beacon frame format).



**Figure 9-135a—Privacy Beacon frame format**

The Protected Frame field of the Frame Control field is set if the Privacy Beacon frame is protected, other-

wise not set.

The Address 1 field is set to the broadcast address.

The Address 2 field is set to the anonymized BSSID (#306) as defined in 10.71.5.4 (Addressing).

The Identity Hash field is set (#415) (#20) as described in 10.71.8.2 (BPE AP MLD beaconing).

The Timestamp field format is described in 9.4.1.10 (Timestamp field). The Timestamp field is anonymized as described in 10.71.5.5 (Timestamp anonymization).

The (#21) Privacy Beacon frame body is shown in Table 9-76a (Privacy Beacon frame body).

|  |  |  |
| --- | --- | --- |
| **Order** | **Information** | **Notes** |
| 1 | BSS Parameter Change Count (BPCC) | The (#134) BSS Parameter Change Count (BPCC) element is present if (#417, #418) the Privacy Beacon is protected, otherwise not present. |
| 2 | TIM | The TIM element is present if (#417, #418) the Privacy Beacon is protected, otherwise not present. |
| 3 | Reduced Neighbor Report | The RNR element is present if (#417, #418) the Privacy Beacon is protected, otherwise not present. |
| 4 | Extended Channel Switch Announcement | The Extended Channel Switch Announcement element is optionally present if (#417, #418) the Privacy Beacon is protected, and dot11SpectrumManagementRequired is true or dot11ExtendedChannelSwitchActivated is true. |

**9.6.7.1 Public Action field**

**Table 9-471—Public Action field values**

|  |  |
| --- | --- |
| **Public Action field value**  | **Description**  |
| <ANA> (last not allocated value)(#930) | Privacy Beacon Solicit Request (see 9.6.42.8(Privacy Beacon Solicit Request frame format) (#930) |
| 61-255 | Reserved |

**9.6.38.1 EDP Action field**

**Table 9-628s – EDP Action field values**

|  |  |
| --- | --- |
| **Value** | **Meaning** |
| 1 | Capabilities and Operation Parameters Request  |
| 2 | Capabilities and Operation Parameters Response |
| (#930) | (#930) |
| 3 – 255 | Reserved |

**9.6.7.56 (#930)Privacy Beacon Solicit Request frame format**

The Privacy Beacon Solicit Request frame is transmitted as (#64) a non-protected management frame to the broadcast address. (#506)

**Table 9-628XX – Privacy Beacon Solicit Request Action field format**

|  |  |
| --- | --- |
| **Order** | **Meaning** |
| 0 | Category  |
| 1 | (#930) Public Action |

(#930)The Category field is defined in 9.4.1.11 (Action field).

The Public Action field is defined in 9.6.7.1 (Public Action field).

**10.71.8.1 BPE AP MLD Discovery**

Each BPE AP affiliated with the BPE AP MLD transmits Privacy Beacon frames (#616). A BPE STA may discover a BPE AP through received Privacy Beacons as described in 10.71.8.2 (BPE AP MLD beaconing).

A BPE AP shall not respond to Probe Request frames and a BPE AP shall not transmit Probe Response frames. A BPE MLD shall not transmit unprotected GAS frames.

A BPE non-AP MLD may transmit unprotected Privacy Beacon Solicit Request frames (see 9.6.42.8 (Privacy Beacon Solicit Request frame format)) (#617) to solicit unprotected Privacy Beacons from BPE APs. A BPE non-AP STA may detect from (#830) a received Privacy Beacon frame whether the transmitting AP MLD (#618) identity key is (#633) preconfigured to the STA, as defined in 10.71.8.2 (BPE AP MLD beaconing). (#830)If the BPE STA has preconfigured identity key, it may associate with the BPE AP. (#99) On reception of a Privacy Beacon Request frame, a BPE AP should schedule an unprotected Privacy Beacon frame for transmission at least within a dot11PrivacyBeaconResponseTime.

(#620) NOTE – An unprotected Privacy Beacon frame is used only to non-associated STAs to check whether they have AP identity key and can associate with the AP, i.e., an unprotected Privacy Beacon frame has no (#628) frame body as (#773) described in Table 9-76a (Privacy Beacon frame body).

NOTE 1—If the medium is congested, the transmission of a Privacy Beacon frame might take longer than the

dot11PrivacyBeaconResponseTime.

A BPE STA may initiate authentication and association with a BPE AP by sending frames with receiver

address set to the Address 2 of the Privacy Beacon frame.

**10.71.8.2 BPE AP MLD beaconing**

A BPE AP MLD shall indicate the status of buffered frames in (#623) the TIM element of a Privacy Beacon frame as specified in 35.3.12.4 (Traffic indications). The BPE non-AP MLD power management rules are specified in 35.3.12 (ML power management).

(#100) The (#628) frame body of a Privacy Beacon frame is encrypted by the GTK, and (#775) it can be decrypted only by the BPE non-AP MLDs associated with the BPE AP MLD of the transmitting BPE AP. (#626) (#417) If the BPE AP has no associated STAs, then the BPE AP may transmit unprotected Privacy Beacon frames that have no frame body; otherwise the BPE AP transmits protected Privacy Beacon frames.

The MAC (#629) header of the Privacy Beacon frame contains a Timestamp field that is anonymized as described in 10.71.5.5 (Timestamp anonymization). A receiver deanonymizes the Timestamp field as described in 10.71.6.5 (Timestamp deanonymization).

(#631) (#633) configured

A BPE non-AP MLD shall use (#101) Equation (10-28) to determine whether (#631) the AP MLD has preconfigured Identity Key of the transmitter of the received Privacy Beacon frame. A preconfigured BPE AP MLD is discovered if the Identity Hash field of the Privacy Beacon frame matches with a secure hash calculated with the Address 2 of the Privacy Beacon frame and the preconfigured Identity Key.

Identity Hash = Truncate-48(HMAC-SHA-256(Identity Key, "BPE AP MLD address resolution"

|| Address 2)). (10-28)

, where:

Identity Hash is the value of the Identity Hash field of the Privacy Beacon.

Identity Key is a 128-bit identifier of the BPE AP MLD.

Address 2 is the (#634) Address 2 field of the Privacy Beacon.

A BPE AP may include (#102) an Extended Channel Switch Announcement element in the Privacy Beacons as described in 11.8.8.2(Selecting and advertising a new channel in a non-DMG infrastructure BSS).

(#834) A BPE AP MLD shall not be part of a Multiple BSSID set.

(#1) NOTE – The BPE AP identity key is AP MLD and single ESS specific. Sharing the key to two or more ESSs might cause privacy violations within ESSs that share the same identity key.

An associated non-AP MLD maintains a (#636) BSS Parameter Change Count (BPCC) value for each BPE AP (#103) with which it has a link. If an associated non-AP MLD detects that a BPCC value of a BPE AP in a received Privacy Beacon frame is larger than the stored BPCC value of the AP, then the non-AP MLD shall obtain the updated BSS parameter values of the AP before it (#637) sends data to the AP.

An associated BPE non-AP MLD (#638) may use the procedure defined in 12.16.4 (EDP capabilities and operation parameters request and response procedure) to obtain the capabilities and operation parameters of BPE AP MLD.

A BPE AP may (#639) broadcast unsolicited encrypted Capabilities And Operation Parameters Response frames to signal updated BSS parameter values to (#838) STAs affiliated with associated BPE non-AP MLDs(#366).

**C.3 MIB detail(#1499)**

dot11PrivacyBeaconResponseTime OBJECT-TYPE

SYNTAX Unsigned32 (1..100)

(#746) UNITS “0.05 milliseconds”

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"This is a control variable.

It is written by an external management entity or the SME. Changes take

effect as soon as practical in the implementation.

This attribute defines the maximum time (#749) after receiving a Privacy Beacon Solicit

Request frame that a Privacy Beacon (#747) frame is scheduled for transmission"(#1500)